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PROBLEMS FOR SOLUTION.

ALGEBRA.

189. Proposed by S. F. NORRIS, Professor of Astronomy and Mathematics, Baltimore City College, Baltimore, Md.

Solve $3x - y = xy - x^2$, $\sqrt[3]{y} = \sqrt{\frac{2y-x}{2}}$.

GEOMETRY.

212. Proposed by B. F. FINKEL, A.M., M.Sc., Professor of Mathematics and Physics, Drury College, Springfield, Mo.

Given two triangles ABC and $A'B'C'$ lying in the same plane. The side $B'C'$ cuts the sides AC , BC , and AB in the points I , H , and G , respectively; the side $A'B'$ cuts the same sides, AC , BC , and AB in D , F , and E , respectively; and $A'C'$ cuts AC , BC , and AB in M , L , and K , respectively. Prove that

$$(DA' \cdot EA' \cdot A'F) (GB' \cdot HB' \cdot B'I) (MC' \cdot LC' \cdot C'K) \\ = -(KA' \cdot A'L \cdot A'M) (FB' \cdot B'E \cdot B'D) (IC' \cdot C'H \cdot C'G).$$

213. Proposed by H. F. MacNEISH, A. B., Instructor in Mathematics, University High School, Chicago, Ill.

Construct an equilateral triangle which shall have its vertices in three given parallel lines.

214. Proposed by H. F. MacNEISH, A. B., Instructor in Mathematics, University High School, Chicago, Ill.

Inscribe in a given circle a triangle whose sides shall pass through three given points.

CALCULUS.

173. Proposed by J. E. SANDERS, Hackney O.

Find the area of the greatest ellipse that can be inscribed in the quadrant of a given circle.

MECHANICS.

164. Proposed by W. J. GREENSTREET, M. A., Editor of The Mathematical Gazette, Stroud, England.

P balances W on a system of n movable pulleys of equal weight, each hanging by a separate string. If P is moved find the maximum acceleration of W .

AVERAGE AND PROBABILITY.

150. Proposed by F. P. MATZ, Sc. D., Ph. D., Professor of Mathematics and Astronomy in Defiance College, Defiance, O.

If the length of a circular arc be b and the radius vary uniformly, what is the average area of all the segments possible?